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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/492,761	01/27/2000	Teiichirou Chiba	VX992060	1341

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EXAMINER
CHU, CHRIS C

ART UNIT	PAPER NUMBER
2815	19

DATE MAILED: 06/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N. 09/492,761	Applicant(s) CHIBA ET AL.	
	Examiner Chris C. Chu	Art Unit 2815	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 March 2003* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on March 31, 2003 has been received and entered in the case.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 8, 9 and 12 ~ 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tam in view of Wang et al.

Regarding claim 1, Tam discloses in Fig. 3 a semiconductor wafer (36) having an outer peripheral face containing a notch (at the place of 38) having an inner wall face extending inwardly and away from the outer peripheral face of the semiconductor wafer towards a center of the semiconductor wafer, wherein markings (38) are formed on the inner wall face.

Tam does not disclose the maximum length of the markings made from dot marks to be 1 ~ 13 μm. However, Wang et al. teaches in Fig. 1, Fig. 3, column 8, lines 15 ~ 23 and column 21, lines 47 ~ 49 a maximum length of the markings (14) made from dot marks (54) to be 10 μm. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Tam by using the maximum length of the marking to be 10 μm as taught by Wang et al. The ordinary artisan would have been motivated to modify Tam in the manner described above for at least the purpose of providing high resolution (column 4, lines 61 ~ 67).

Regarding claim 8, as to the language on line 2, "the dot marks being formed by irradiating a laser beam", even though product-by-process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted). A "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, **190 USPQ 15 at 17** (footnote 3). See also In re Brown, **173 USPQ 685**: In re Luck, **177 USPQ 523**; In re Fessmann, **180 USPQ 324**: In re Avery, **186 USPQ 116**; In re Wertheim, **191 USPQ 90 (209 USPQ 254** does not deal with this issue); and In re Marosi et al., **218 USPQ 289** final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Regarding claim 9, Wang et al. discloses in column 12, lines 9 ~ 12 the dot marks having a height in 0.2 μm.

Regarding claim 12, Tam discloses the markings being arranged on the inner surface of the notch. Further, the phrase "the markings being arranged on the inner surface of the notch prior to fabrication steps of a slicing step, and before mirror face fabrication step and chemical polishing step" is product-by-process language, even though product-by-process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted). A "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, **190 USPQ 15 at 17** (footnote 3). See also In re Brown, **173 USPQ 685**: In re Luck, **177 USPQ 523**; In re Fessmann, **180 USPQ 324**: In re Avery, **186 USPQ 116**; In re Wertheim, **191 USPQ 90 (209 USPQ 254** does not deal with this issue); and In re Marosi et al., **218 USPQ 289** final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Regarding claim 13, the phrase "the markings contain all the history information concerning fabrication steps for fabricating the semiconductor wafer' is intended use language which does not differentiate the claimed apparatus from Tam in view of Wang et al.

Regarding claim 14, Tam discloses in Fig. 3 a semiconductor wafer (36) comprising a marked semiconductor wafer made from a semiconductor wafer that was subjected to at least one fabrication step that is visibly discernible on the marked semiconductor wafer;

- the marked semiconductor wafer (36) having an outer peripheral face containing a notch (at the place of 38), the notch extending inwardly and away from the outer peripheral face of the semiconductor and towards a center of the semiconductor, the notch having an inner wall face separated from and arranged inside the outer peripheral face of the marked semiconductor; the inner wall face of the notch containing markings (38).

Tam does not disclose the maximum length of the markings made from dot marks being 1 ~ 13 μm. However, Wang et al. teaches in Fig. 1, Fig. 3, column 8, lines 15 ~ 23 and column 21, lines 47 ~ 49 a maximum length of the markings (14) made from dot marks (54) to be 10 μm. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Tam by using the maximum length of the marking to be 10 μm as taught by Wang et al. The ordinary artisan would have been motivated to modify Tam in the manner described above for at least the purpose of providing high resolution (column 4, lines 61 ~ 67).

Regarding claim 15, Tam discloses in Fig. 3 a semiconductor wafer (36) having a peripheral surface that was treated with processing steps, so that the peripheral surface contains visibly discernible structure resulting from the processing steps; and

- the inner surface of the semiconductor wafer including a notch, the notch extending inwardly and away from the peripheral surface of the semiconductor and towards a

center of the semiconductor, the notch having an inner wall face separated from and arranged inside the peripheral surface of the semiconductor; the inner wall face of the notch containing markings (38).

Tam does not disclose the maximum length of the markings made from dot marks being 1 ~ 13 μm. However, Wang et al. teaches in Fig. 1, Fig. 3, column 8, lines 15 ~ 23 and column 21, lines 47 ~ 49 a maximum length of the markings (14) made from dot marks (54) to be 10 μm. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Tam by using the maximum length of the marking to be 10 μm as taught by Wang et al. The ordinary artisan would have been motivated to modify Tam in the manner described above for at least the purpose of providing high resolution (column 4, lines 61 ~ 67).

4. Claims 2 ~ 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tam and Wang et al. as applied to claim 1 above, and further in view of Oishi et al.

Regarding claim 2, Tam, as modified, discloses the claimed invention except for upper and lower edge line portions of the inner wall face of the notch are respectively chamfered to thereby constitute upper and lower inclined faces and the dot marks are formed on the inclined faces. However, Oishi et al. teaches in Figs. 1a and 1b an upper and lower inclined faces (2) and the marks (4) being formed on the inclined faces. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to further modify Tam by using the upper and lower inclined faces and the dot mark on the inclined faces as taught by Oishi et al. The ordinary artisan would have been motivated to further modify Tam in the manner described

above for at least the purpose of reducing residual work stress or thermal stress on a wafer (column 1, lines 45 ~ 48). Further, as to the language on lines 1 ~ 3, "upper and lower edge line portions of the inner wall face of the notch are respectively chamfered to thereby constitute upper and lower inclined faces", even though product-by-process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted). A "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, **190 USPQ 15 at 17** (footnote 3). See also In re Brown, **173 USPQ 685**: In re Luck, **177 USPQ 523**; In re Fessmann, **180 USPQ 324**: In re Avery, **186 USPQ 116**; In re Wertheim, **191 USPQ 90 (209 USPQ 254** does not deal with this issue); and In re Marosi et al., **218 USPQ 289** final product per se which must be determined in a "product by, all of" claim, and not the patentability of the process, and that an old or obvious product, whether claimed in "product by process" claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Regarding claims 3 and 6, since Tam, as modified, does not limit the angle of an inclination of at least one inclined face to any particular or specific degree, the reference discloses encompasses all well known an angle of an inclination of at least one inclined face relative to the surface of the semiconductor wafer including "equal to or smaller than 30 degree" (see Fig. 1b of Oishi et al.).

Regarding claims 4 and 7, Oishi et al. discloses in column 2, lines 9 ~ 14 a surface roughness of at least one inclined face being equal to or smaller than 1 μm.

Regarding claim 5, Tam, as modified, teaches the dot marks being formed on either one of the upper and lower inclined faces (see Fig. 1b of Oishi et al.).

5. Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tam and Wang et al. as applied to claim 1 above, and further in view of Iwai.

Regarding claim 10, Tam, as modified, discloses the claimed invention except for the markings including alphanumeric characters. However, Iwai discloses in Fig. 11 the markings including alphanumeric characters. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to further modify Tam by using the alphanumeric characters as taught by Iwai. The ordinary artisan would have been motivated to further modify Tam in the manner described above for at least the purpose of reading an information mark formed on the semiconductor wafer (column 3, lines 63 and 64).

Regarding claim 11, Iwai discloses a single font of the alphanumeric characters being arranged in a pattern of 5 dot marks by 9 dot marks since using 5 X 9 dot marks to form a single font of alphanumeric characters is SEMI standards.

Response to Arguments

6. Applicant's arguments with respect to claims 1, 2 and 11 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is (703) 305-6194. The examiner can normally be reached on M-F (10:30 - 7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Chris C. Chu
Examiner
Art Unit 2815

c.c.
June 9, 2003

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